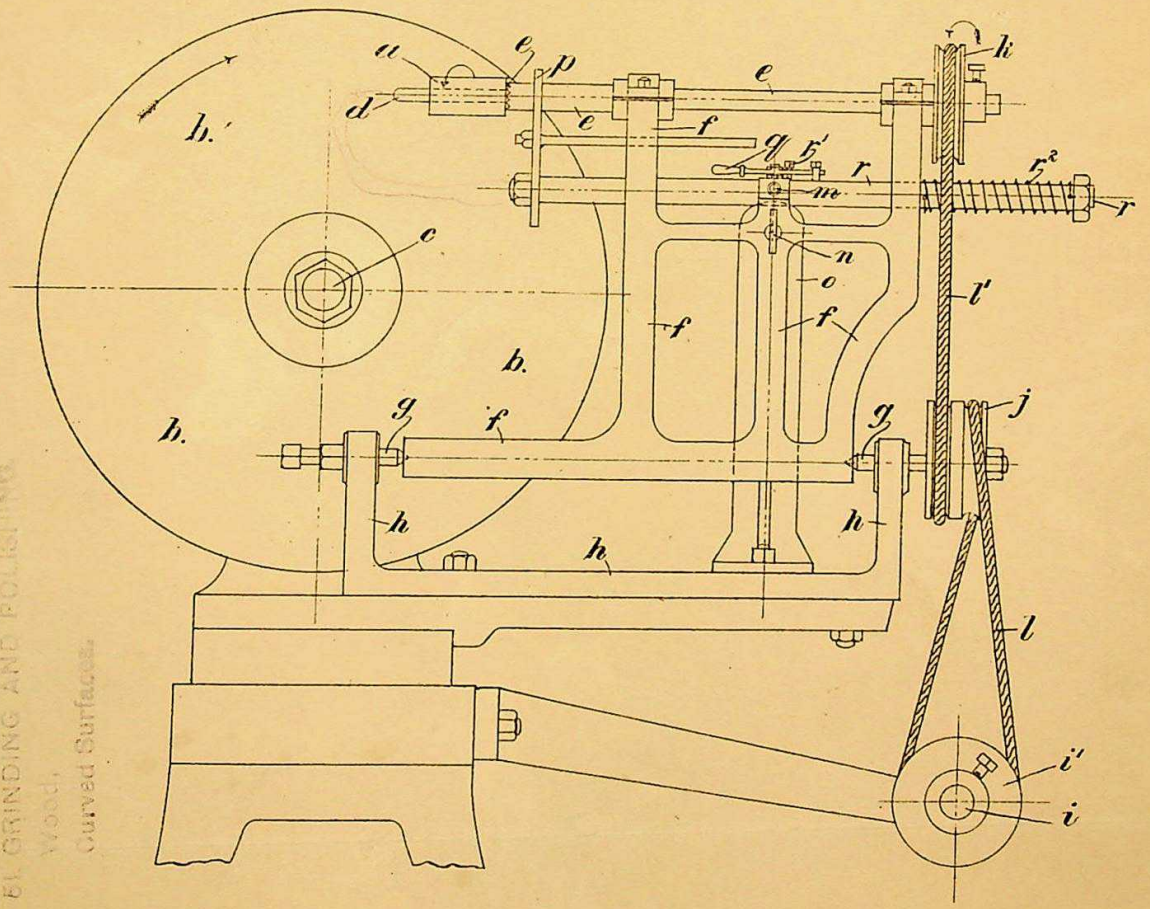
[This Drawing is a reproduction of the Original on a reduced scale.]

(2 SHEETS.) SHEET 1.

21,533
1896

Fig. 1.



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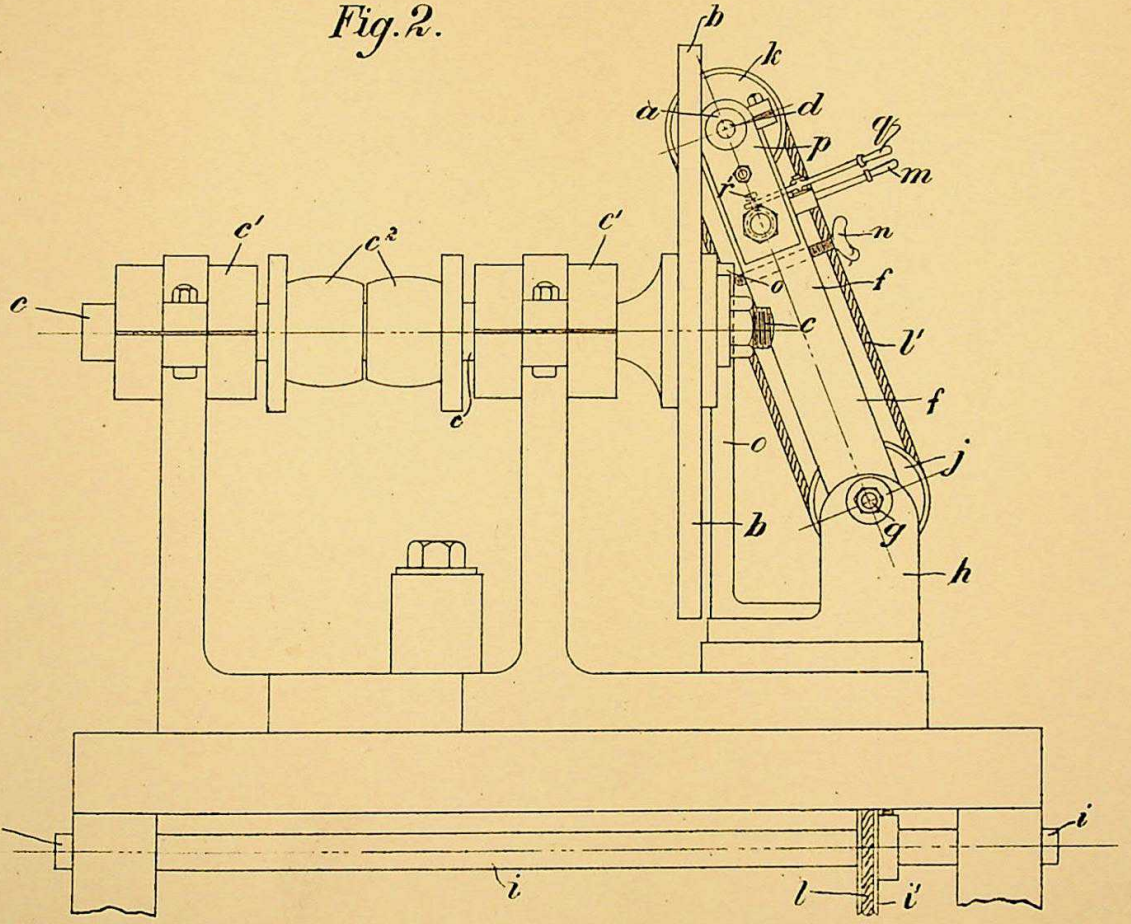
Malby & Sons, Photo-Lith.

A.D. 1895, Nov. 13. N° 21,533.
LOWMAN & *another's* Complete Specification

Fig. 2.



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N° 21,533 A.D. 1895

Date of Application, 13th Nov., 1895

Complete Specification Left, 12th Aug., 1896—Accepted, 7th Nov., 1896

PROVISIONAL SPECIFICATION.

DUPLICATE

Improved Machinery for Making Cork Rings, Ferrules, and other Tubular Articles.

We, JOHN LOWMAN, of 140 Ormside Street, London, S.E., Engineer and ALFRED ROSS, of 17 Water Street, Liverpool, in the County of Lancaster, Accountant, do hereby declare the nature of this invention to be as follows :—

This invention has reference to the manufacture of cork ferrules, rings, and other tubular articles, as cycle and other handles, and the like; and has for its object more particularly to provide improved apparatus or machinery, by which such articles can be accurately manufactured, and also at a rapid rate, and consequently at little cost.

According to this invention, a tubular article to be made is carried on a mandril and revolved at a suitable speed; and it is acted upon externally by an abrasive surface revolving in a plane parallel, or nearly parallel, with the axis of the mandril, and the article and mandril are adapted to be moved up to and away from this abrasive surface by suitable mechanism; or, conversely, the abrasive part may be so moved up to the article.

One convenient arrangement of mechanism for and mode of manufacturing the articles by apparatus such as referred to, consists of employing a rotating disc having upon its surface an abrasing material, such as glass, flint, or sand paper or powder or the like, while the cork is carried in a frame adapted to vibrate or oscillate about a pivot or point of support. By this means, the article to be shaped is moved up to and away from the face of the disc, by moving the frame up to and away from it (the disc); and when it is completed, it is removed from the mandril by an ejector device, moving parallel with the axis of the mandril, which is conveniently moved to and fro by a simple handle, the return of the ejector device being suitably effected by a spring; after a finished article is ejected a fresh blank or raw ferrule or other article is put upon the mandril and operated upon in a similar manner. In this form of apparatus, to render certain that the diameter of the article produced shall always be the same, a screw, or other adjustable device is provided on the vibrating mandril frame, and this stop comes in contact with a fixed stop on a suitable part of the machine. By this means, not only are articles of exactly the same diameter for a given "setting" secured, but this diameter can be varied at will for making different sized articles.

A special construction and arrangement of parts, and means of performing the several actions, of a machine having the characteristics above described, is as follows :—

The grinding or abrading disc is mounted on a suitable axis, and revolved at a suitable rate of speed; while the mandril is mounted upon a shaft, supported in the vibrating frame above described, and standing above the level of the disc shaft, and say to one side thereof, so that the movement of the abrading disc tends to keep the cork ferrule on its mandril, and the head of this mandril is conveniently made in clutch form to effect a firm grip between the mandril and the cork article. The mandril shaft is driven from the motor shaft of the machine by bands or cords, and through an intermediate pulley mounted on the same centre or line of axis of the pivots of the vibrating frame, so as to allow of free movement of this frame. The limit of movement of the vibrating frame is effected by a stop device

[*Price* 8*d*.]

consisting of an adjustable screw or stud in said frame, and a fixed stop or block behind same, in contact with which the screw would come when the cork tube or article has been reduced to the diameter desired. The ejecting device, in this arrangement, consists of a shaft parallel with the mandril shaft, and mounted and supported in the vibrating frame, and having at its operative end a foot standing at right angles, the end of which fits over the head of the mandril, so as to come in contact with the rear edge of the tubular article when pressed outwards. This rod and ejecting foot are adapted to be moved to and fro by a lever or handle supported by the vibrating frame, so that the foot comes in contact with the back edge of the ferrule, and removes it from the mandril in the ejecting action, whilst the return action is effected by a spring mounted upon the back end of the ejector shaft, its reaction being afforded by bearing upon a part of the vibrating frame. The means of vibrating the frame to and fro, may suitably consist of a second handle; in this case the operation of this machine is, that by one handle, the frame and article to be shaped are moved up to the disc, by the movement of the other handle, the manufactured article is ejected. While this particular form and mode of action offer convenience and simplicity, the invention is not necessarily restricted to it, or to any particular form as to parts, so long as they contain or involve the main characteristics of the invention above referred to.

The exterior form of the articles produced may be varied; as for instance, it may be parallel, or tapered, or curved or concave, as in the case of cycle handles. To provide these different forms or shapes of articles, the surface of the abrading disc will be set, or its shape made, accordingly; or, in the case, say of curved or concave articles being made, the parts of the machinery carrying the vibrating frame may be moved horizontally about a pivot, so as to change the position of the article being made in relation to the disc; in which case, the disc itself, or its surface, would, in most cases, be even.

Dated this 13th day of November 1895.

CHEESBROUGH & ROYSTON,
15 Water Street, Liverpool, Applicants' Patent Agents.

COMPLETE SPECIFICATION.

Improved Machinery for Making Cork Rings, Ferrules, and other Tubular Articles.

We, JOHN LOWMAN, of 140 Ormside Street, London, S.E., Engineer, and ALFRED ROSS, of 17 Water Street, Liverpool, in the County of Lancaster, Accountant, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention has reference to the manufacture of cork ferrules, rings, and other tubular articles, as cycle and other handles, and the like; and has for its object more particularly to provide improved apparatus or machinery, by which such articles can be accurately manufactured, and also at a rapid rate, and consequently at little cost.

According to this invention, a tubular article to be made is carried on a mandril and revolved at a suitable speed; and is acted upon externally by an abrasive surface revolving in a plane parallel, or nearly parallel, with the axis of the mandril, and the article and mandril are adapted to be moved up to and away from this abrasive surface by suitable mechanism; or, conversely, the abrasive part may be moved up to the article.

One convenient arrangement of mechanism for, and mode of manufacturing the articles by apparatus such as referred to, consists of employing a rotating disc

having upon its surface an abrading material, such as glass, flint, sand paper, or powder, or the like, while the cork is carried in a frame adapted to vibrate or oscillate about a pivot or point of support. By this means, the article to be shaped is moved up to and away from the face of the disc, by moving the frame up to and away from it (the disc); and when it is completed, it is removed from the mandril by an ejector device, moving parallel with the axis of the mandril, which is conveniently moved to and fro by a simple handle, the return of the ejector device being suitably effected by a spring. After a finished article is ejected a fresh blank or raw ferrule or other article is put upon the mandril and operated upon in a similar manner. In this form of apparatus, to render certain that the diameter of the article produced shall always be the same, a screw or other adjustable device is provided on the vibrating mandril frame, and this stop comes in contact with a fixed stop on a suitable part of the machine. By this means, not only are articles of exactly the same diameter for a given "setting" secured, but this diameter can be varied at will for making different sized articles.

A special construction and arrangement of parts, and means of performing the several actions, of a machine having the characteristics above described, is as follows:—

The grinding or abrading disc is mounted on a suitable axis, and revolved at a suitable rate of speed; while the mandril is mounted upon a shaft, supported in the vibrating frame above described, and standing above the level of the disc shaft, and say to one side thereof, so that the movement of the abrading disc tends to keep the cork ferrule on its mandril, and the head of the mandril is conveniently made in clutch form to effect a firm grip between the mandril and the cork article. The mandril shaft is driven from the motor shaft of the machine by bands or cords, and through an intermediate pulley mounted on the same centre or line of axis of the pivots of the vibrating frame, so as to allow of free movement of this frame. The limit of movement of the vibrating frame is effected by a stop device consisting of an adjustable screw or stud in said frame, and a fixed stop or block behind same, in contact with which the screw would come when the cork tube or article has been reduced to the diameter desired. The ejecting device, in this arrangement, consists of a shaft parallel with the mandril shaft, and mounted and supported in the vibrating frame, and having at its operative end a foot standing at right angles, the end of which fits over the head of the mandril, so as to come in contact with the rear edge of the tubular article when pressed outwards. This rod and ejecting foot are adapted to be moved to and fro by a lever or handle supported by the vibrating frame, so that the foot comes in contact with the back edge of the ferrule, and removes it from the mandril in the ejecting action; whilst the return action is effected by a spring mounted upon the back end of the ejector shaft, its reaction being effected by bearing upon a part of the vibrating frame. The means of vibrating the frame to and fro, may suitably consist of a second handle; in this case the operation of this machine is, that by one handle, the frame and article to be shaped are moved up to the disc, by the movement of the other handle, the manufactured article is ejected. While this particular form and mode of action offer convenience and simplicity, the invention is not necessarily restricted to it, or to any particular form as to parts, so long as they contain or involve the main characteristics of the invention above referred to.

The exterior form of the articles produced may be varied; as for instance, it may be parallel, or tapered, or curved or concave, as in the case of cycle handles. To provide these different forms or shapes of articles, the surface of the abrading disc will be set, or its shape made, accordingly; or, in the case, say of curved or concave articles being made, the parts of the machinery carrying the vibrating frame may be moved horizontally about a pivot, so as to change the position of the article being made in relation to the disc; in which case, the disc itself, or its surface, would, in most cases, be even.

The machinery by which the manufacture of hollow or tubular cork articles are

made is shewn in the drawings hereto annexed, in which Figure 1 is a front elevation, and Figure 2 a side elevation.

Referring to the drawings, *a* is a tubular article, the outside surface of which it is desired to make circular, and to be rendered perfectly smooth. This article is acted upon externally by a disc *b* having a glass paper, sand, emery, or like surface. The disc *b* is mounted on the shaft *c* carried in brackets c^1, and the shaft *c* is driven by a belt through pullies c^2. The cork article *a* is carried on a mandril *d* on the end of a shaft *e*, mounted in a vibrating frame *f*; this frame being itself supported by the centres *g* in the bracket supports *h*. The shaft *e* is rotated from a driving shaft *i* and a pulley i^1, through the double pulley *j*, on the same centre as the centre *g*, and another pulley *k* on the shaft *e*; these pullies being driven one from the other by the bands *l* l^1.

The cork article *a* has movement to and fro up to and away from the disc *b*, and the frame *f* rocks about the centres *g*. This movement is given it by the handle *m* on the frame; and the movement forward is adjusted by an adjustable screw *n* which can be screwed more or less through the frame *f*, and a stop plate *o*, against which the end of the screw end comes when the frame is pressed forward. By this means, the size or diameter of the cork *a* is controlled, and accordingly as the set screw *n* is screwed more or less in or out, so the diameter of the cork made will be larger or smaller.

The action of the apparatus is,—the revolving abrading disc *b* is rotated, and a cork *a* (previously bored so that it can be placed on the mandril *d*), is pushed firmly on the mandril, so that its back end engages with the points of the serrated end e^1 of the shaft *e*; and this shaft *e* being in rapid rotation, when the frame with its cork in the rough is moved towards the disc *b*, so as to press the cork onto the surface of the disc, then, by the rotation of the cork in the opposite direction to, and in conjunction with the rotation of the disc *b*, in the direction of the arrow thereon, a true and perfectly smooth surface is put on the cork; and by the position of the cork in relation to the disc shewn in the drawings, and by the rotation of that disc endwise onto the cork, such cork is naturally pressed by the rotation of the disc onto the serrations or points, e^1, and the cork is thus held firmly in position and revolves against the action of the disc *b*. These double actions soon grind the cork to the right size and with a smooth surface; and when the cork is finished, an ejector *p* behind the cork *a* is moved outward by the handle *q* and shaft *r*, the outer end of which shaft carries the ejector *p*; and by moving the handle *q*, it acts upon one of the studs r^1 in the shaft *r*, and moves it forward. The backward movement of this shaft is effected by a spring r^2 at the other end. After a hollow cork is finished, the frame is moved away from the disc *b*, and the finished cork *a* is ejected by operating the lever *q*.

Although the invention thus far described has been set forth as applied to the manufacture of hollow cork articles, yet it is to be understood that the improvements hereunder may, by simple modifications of the means for supporting the cork, be applied to the manufacture of solid corks or solid cork articles. And, moreover, the invention is not limited or restricted to the particular forms or constructions of parts of machinery shewn and described.

The form of the exterior of the articles may be rendered different, that is to say, they may be parallel, tapered, or curved or concave, or of other suitable form by making the surface of the disc *b* of such a form; or, it may be effected by making the bracket frame *h* adjustable on the bed of the machine, so that the shaft *e* may be moved to stand at an inclination to the surface of the disc *b*, instead of parallel as shewn in the drawings. This latter method, or the former, of effecting this end, may be adopted according to which is most convenient.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Improved machinery for making cork articles or corks, consisting of a rotating

body *b* having an abrasive surface, and a rotating cork holding shaft or mandril supported in a moveable or vibrating carrier, and revolved therein, whereby the cork is acted upon by its own revolution, in conjunction with the revolving of the abrading body; substantially as described.

2. In machinery for making cork articles or corks, the rotating abrasive disc *b*, and a revolving shaft *e*, having a mandril *d* carrying the cork *n*, and carried in the vibrating frame *f*; all substantially as set forth with reference to and shewn in the drawings.

3. The machinery for making hollow cork articles set forth particularly with reference to and shewn in the drawings.

Dated this 11th day of August 1896.

CHEESBROUGH & ROYSTON,
15 Water Street, Liverpool, Applicants' Patent Agents.

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